Suffix combinations in derivation: a cognitive approach

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Goals

- to detect the logic behind affix order in two languages (English and Bulgarian) from two different language families (Germanic and Slavic)
- to formulate cross-linguistic predictions about affix order

The structure of the talk

- Affix order as a topic in linguistic theory
- Approaches to affix order
- The current research
- Data and method
- Suffix order in English (Aronoff & Fuhrhop's 2002 and Plag & Baayen's 2009)
- Suffix order in Bulgarian
- Discussion
- Conclusion

Affix order

Of all possible combinations of affixes in a language a relatively limited number exists, which gives rise to questions about the factors responsible for the combinations of affixes. Affix order is a central topic in linguistic theory and has been approached from different perspectives.

Approaches to affix order

Depending on the type of information relevant to affix order:

1) phonological
2) morphological
3) syntactic
4) semantic
5) statistical
6) psycholinguistic
7) cognitive, and
8) templatic

(Manova & Aronoff 2010)

The current research

- This is a pilot study that focuses on the order of suffixes in formations with derived bases, i.e. of the type:

(BASE + SUFF1) + SUFF2

SUFF1 and SUFF2 belong to the major syntactic categories (word classes), N, V and ADJ.

The syntactic (word-class) specification of a suffix is seen as based on the speaker's cognitive knowledge about the world.

The claim

There is a systematic relationship between the word class of a derived base (terminating in SUFF1) and the attached SUFF2 in the sense that there is a clear tendency for a SUFF1 to select only one SUFF2 of a major syntactic category. If more than one SUFF2 with the same word-class specification exist, either one of the SUFF2 suffixes applies by default, i.e. most of the derivations exhibit that suffix, or there is some semantic rule that requires a particular single SUFF2. Additionally, since word-formation is prototypically word-class-changing, SUFF1 and SUFF2 usually have different word-class specification.

SUFF1 + SUFF2

$[\text{BASE} + \text{SUFF1}]_{\text{N, A, V}}$ → NOUN (N)

→ ADJECTIVE (A)

→ VERB (V)

Gauss-Jordan elimination

$$
\begin{aligned}
x + y + 2z &= 8 \\
-1x - 2y + 3z &= 1 \\
3x - 7y + 4z &= 10
\end{aligned}
$$

Gauss-Jordan elimination 2

$$\left[\begin{array}{ccc:c} 1 & 0 & 0 & 3 \\ 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 2 \end{array}\right]$$

Linguistic evidence for the importance of word-class-specification

- All languages seem to distinguish between verbs and non-verbs.

(Mithun 1999; Baker 2003)

- There are affixes that are typical of particular word-classes, e.g. inflectional and evaluative morphology (i.e. diminutives and augmentatives).

Data: English versus Bulgarian

- Differ typologically: English tends to the isolating morphological type, Bulgarian is inflecting-fusional.
- Differ with respect to affix order: English derivational morphology is acyclic, Bulgarian derivational morphology allows for suffix permutations of the type AB – BA, i.e. a suffix can follow and precede another suffix on a word (Plag & Baayen 2009; Manova 2010)

Data and method

- Two sets of English suffixes

Aronoff & Furhop (2002) = 43 suffixes (Oxford English Dictionary 1994)

Plag & Baayen (2009) = 29 suffixes (CELEX & written part of the British National Corpus)

One set of Bulgarian suffixes

- 35 Bulgarian suffixes (Reverse dictionary of Bulgarian 1975)

The Bulgarian data is from the project '(De)composing the Slavic word' that is currently carried out at the University of Vienna, Austria.

Data and method 2

No	SUFF1	Syntactic category of SUFF1	SUFF2	SUFF2 suffixes with the same word-class in numbers
28.	*-ist*	N	N: -doom (2) ADJ: **-ic (631)**, -y (5) V: -ize (3)	N: **1** ***ADJ: 2*** V: **1**

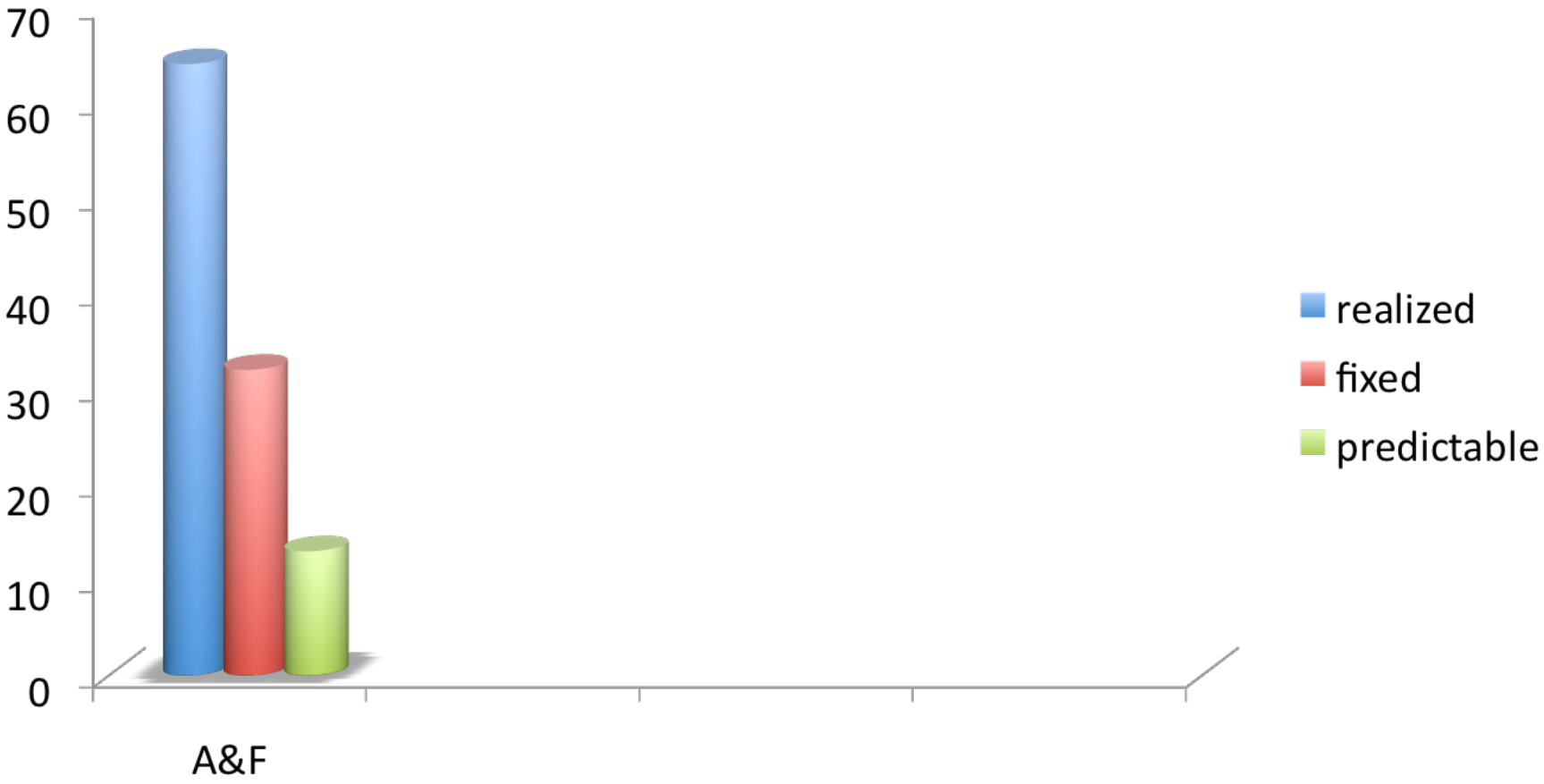
- -ist + -doom = fixed combination
- -ist + -ic = combination by default, i.e. predictable
- -ist + -y = rote-learned combination, i.e. predictable
- -ist + -ize = fixed combination

Suffix order in English (Aronoff & Fuhrhop 2002)

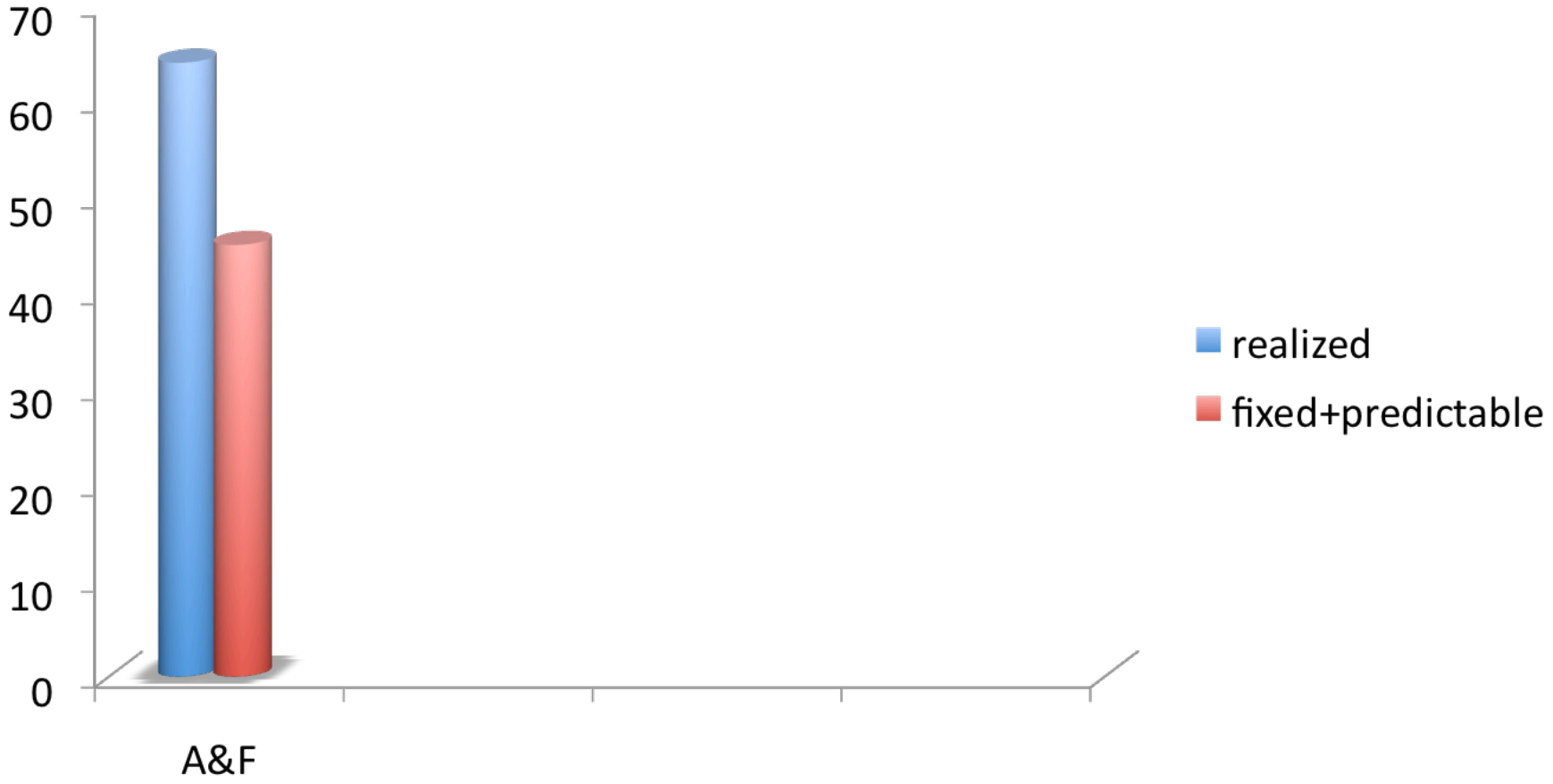
- 43 suffixes, i.e. 129 (= 43x3) possible outputs with different syntactic specifications
- 64 realized outputs
- 32 fixed combinations
- 13 predictable combinations

The data have been rearranged for the purposes of the current study.

Aronoff & Fuhrhop (2002)



Aronoff & Fuhrhop (2002)

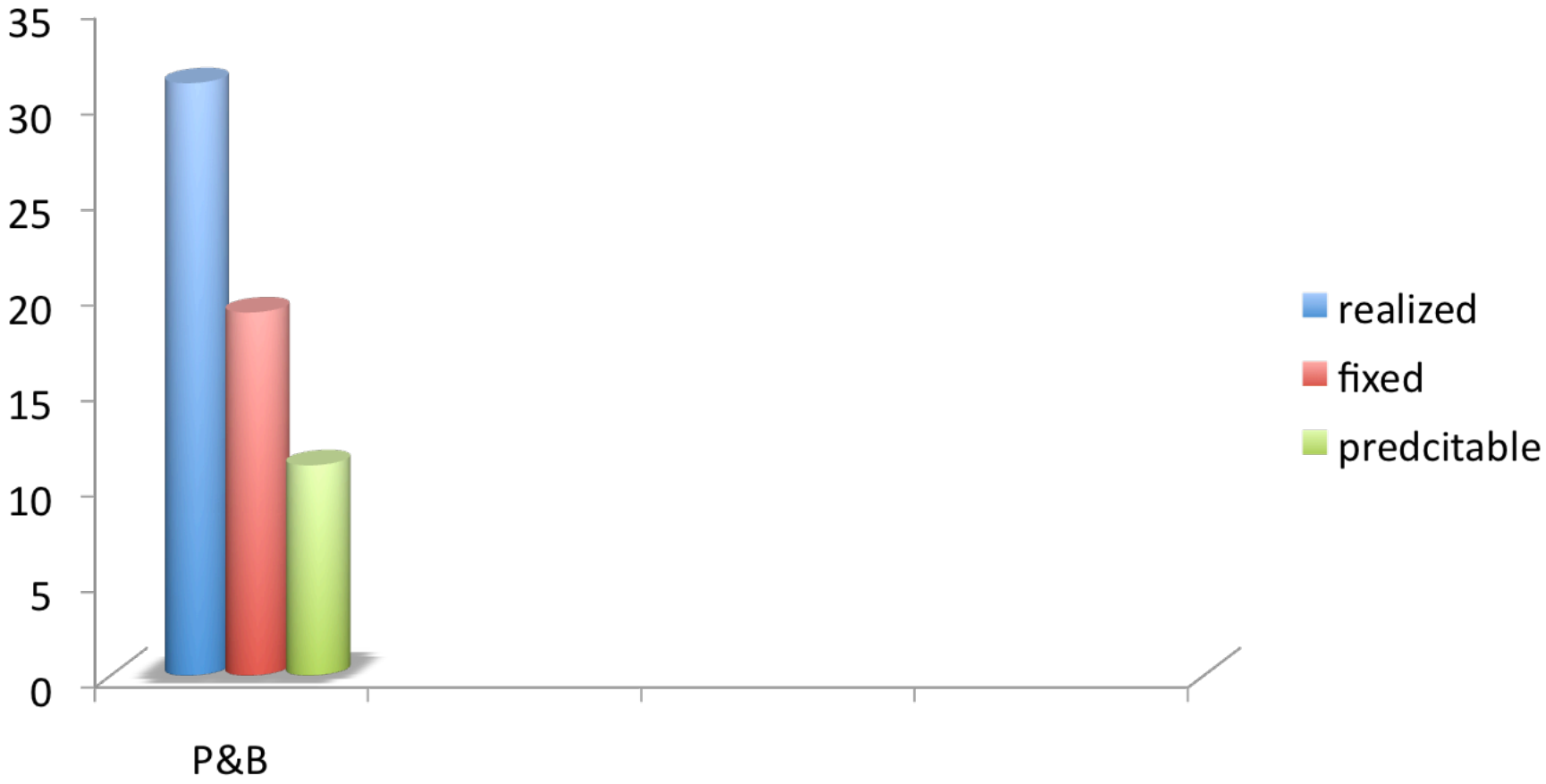


Suffix order in English (Plag & Baayen 2009)

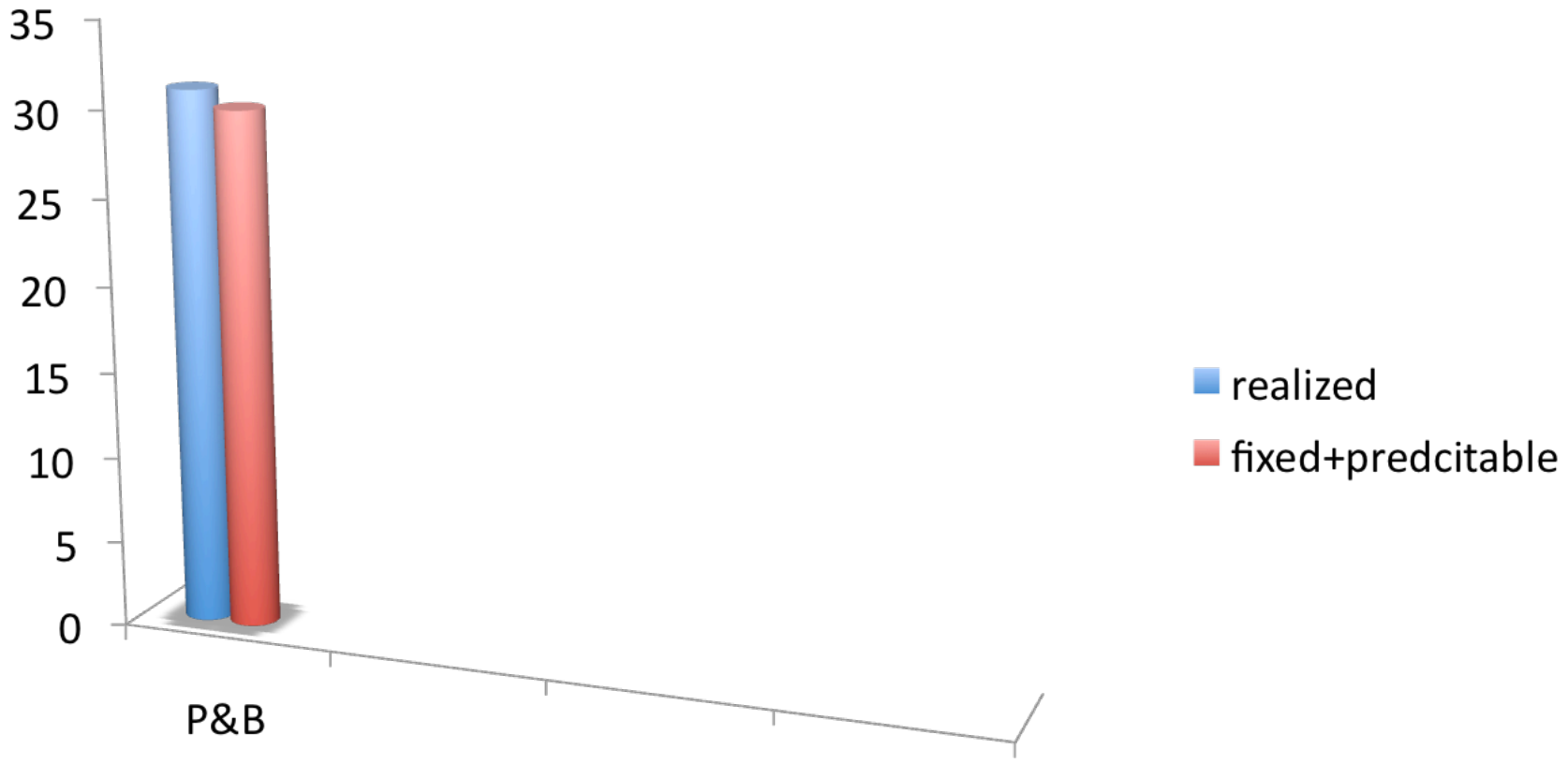
- 29 suffixes, i.e. 87 (= 29x3) possible outputs with different syntactic specification
- 31 outputs are realized
- 18 fixed combinations
- 12 predictable combinations

The data have been rearranged for the purposes of this study.

Plag & Baayen (2009)



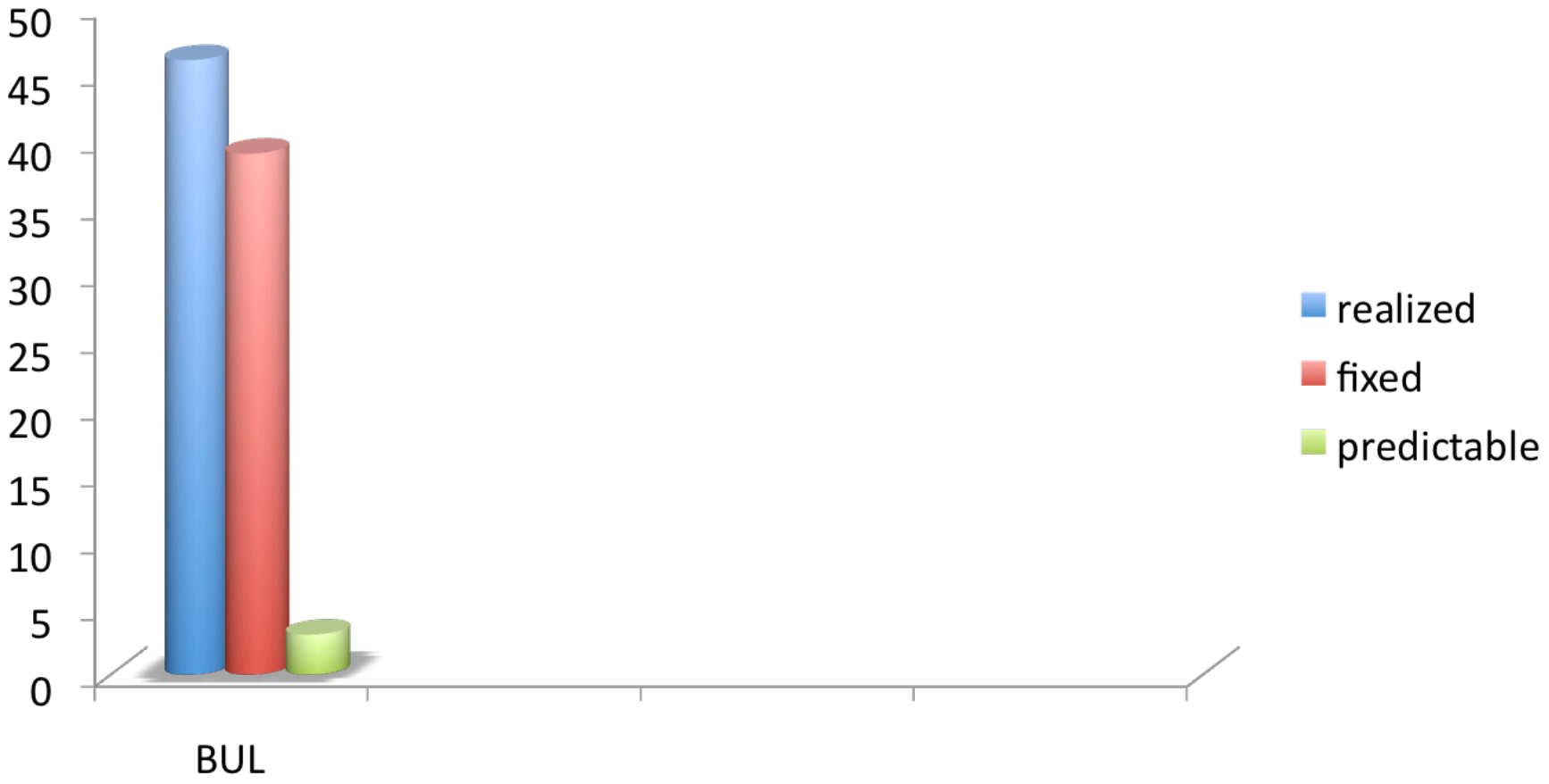
Plag & Baayen (2009)



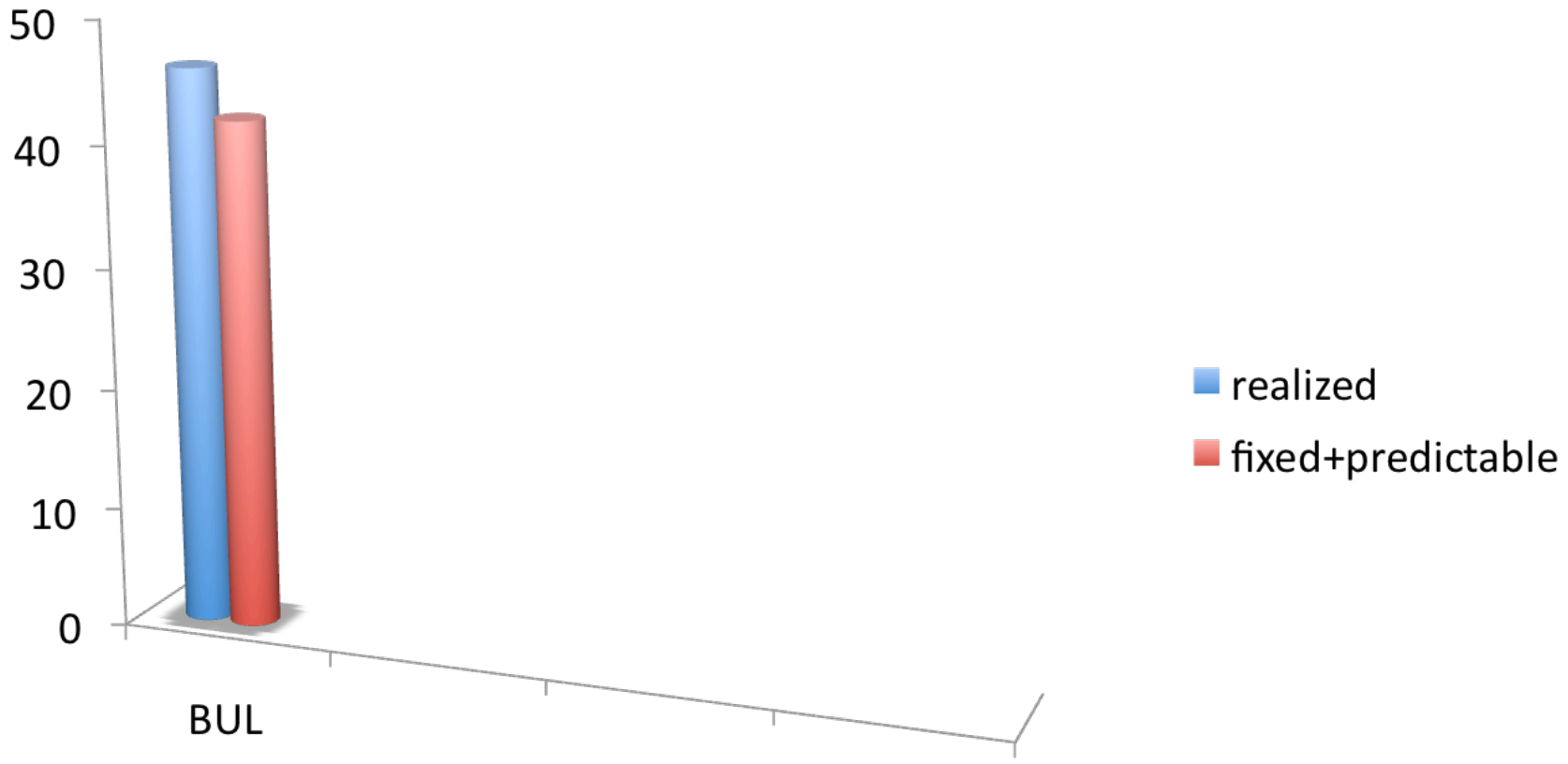
Suffix order in Bulgarian

- 35 suffixes, i.e. 105 (35x3) possible outputs with different syntactic specifications
- 46 realized outputs
- 39 fixed combinations
- 3 predictable combinations

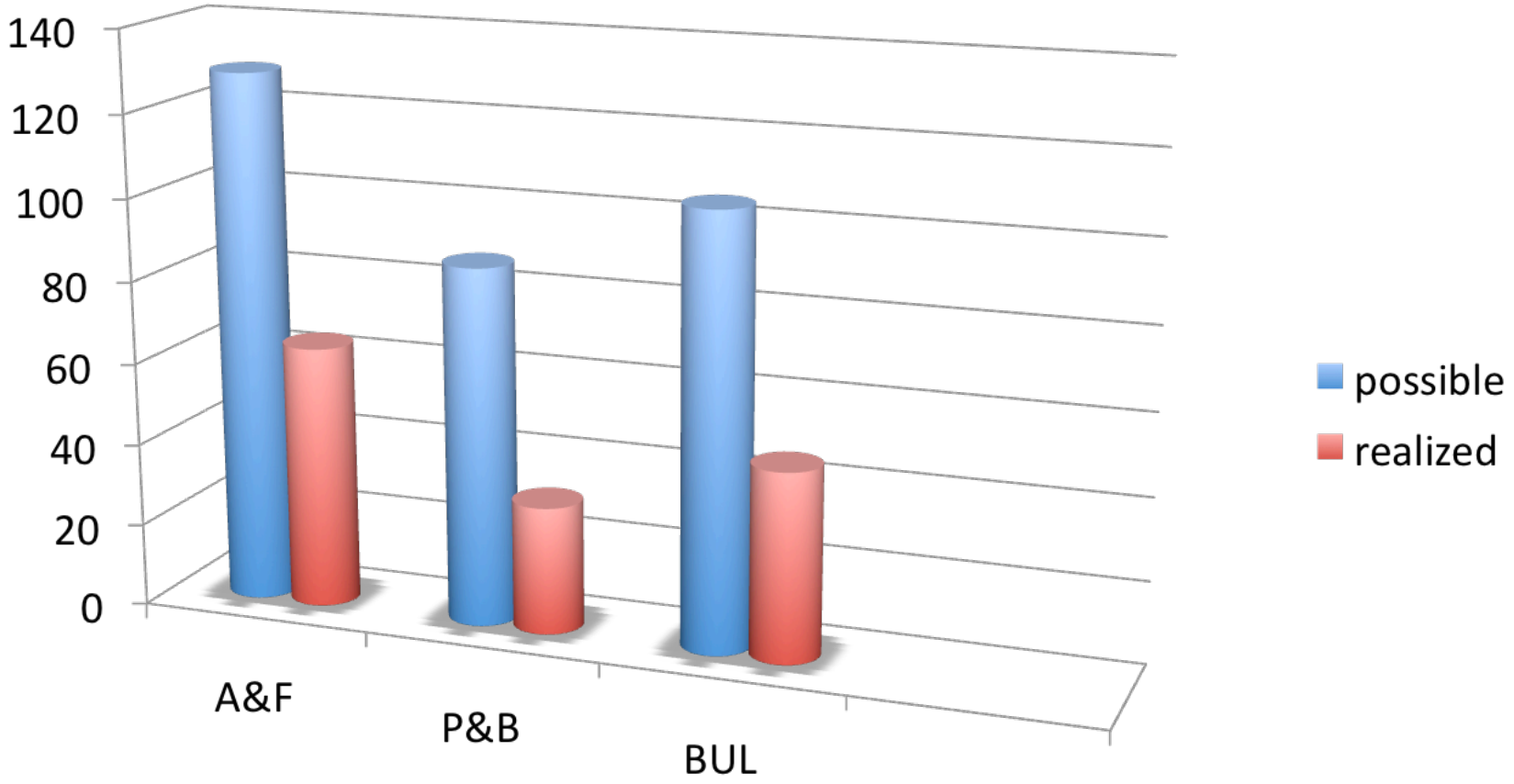
Bulgarian



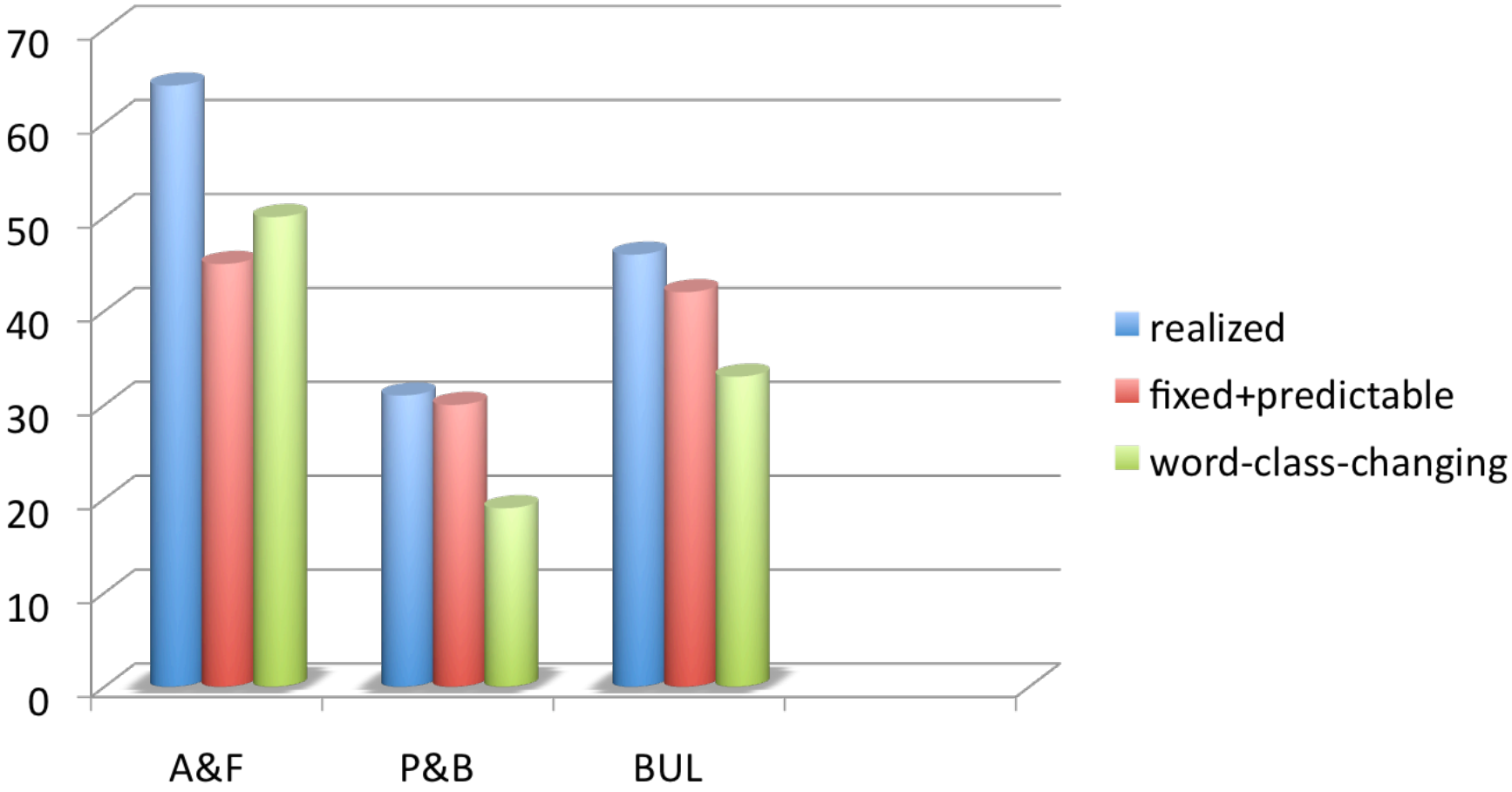
Bulgarian



Discussion: possible versus realized combinations



Discussion 2



Discussion 3

No	SUFF1	**Syntactic category of SUFF1**	**SUFF2**	**SUFF2 suffixes with the same word-class in numbers**
12.	***-ina***	N	ADJ: *-en* (36), *-ski* (9)	ADJ: 2
22.	***-(l)iv***	ADJ	N: *-ost* (194), *-ec* (15), *-ina* (3)	N: 3
23.	***-(on)en***	ADJ	N: *-ost* (789); *-ica* (4), *-ina* (43), *-ota* (8)	N: 4
29.	***-ov/-ev***	ADJ	N: *-ost* (7), *-ina* (22)	N: 2

Conclusion

- Suffix order in Bulgarian and English does not involve choice, i.e. it is not so that a speaker selects one of a set of possible (appropriate) SUFF2 suffixes.
- On the basis of the word-class specifications of SUFF1 and SUFF2 one can predict the majority of the suffix combinations in English and Bulgarian, the rest being defined by default and (fine-grained) semantics.

Conclusion 2

- Speakers of Bulgarian and English do not order derivational suffixes but based on intensional semantics and the semantics of bases and suffixes, produce fixed combinations.
- Indirect support for the logic of this study provides biology, specifically genetics where four bases only, adenine (A), guanine (G), cytosine (C), and thymine (T), encode the whole variety of life. Intriguingly, the combinations of the four bases are not free but fixed: A base pairs with T, and G base pairs with C.

Acknowledgements

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